

## ODOO-BASED STOCK MANAGEMENT SYSTEM DESIGN AT PT. IMEDIA NUSANTARA

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### ABSTRACT

Designing an efficient and effective stock management system is an important challenge for companies in optimizing their supply chain operations, namely PT. Imedia Nusantara, a fast grow retail company, faces the same challenges in managing their stock. In order to increase the efficiency of stock management and reduce inventory discrepancies, this study aims to design and implement an Odoo-based stock management system at PT. Imedia Nusantara. The method used in this research is Rapid Application Development (RAD), which is suitable for this research because it can support Enterprise Resource Planning (ERP) systems. This research involved several stages, including requirements planning, in which the authors conducted an analysis of the needs needed to support the inventory process at PT. Imedia Nusantara. Furthermore, in the design stage (design workshop), the authors use the unified Modeling Language (UML) modeling to design the system. At the implementation stage, the author applies the existing system at PT. Imedia Nusantara, and conduct testing after the implementation stage. The result of this study is the implementation of an ERP system using the Odoo application version 16 with the Inventory module to record stock items.

**Keywords:** ERP, Inventory, Odoo, RAD, Stock Management System

### INTRODUCTION

In the business world, inventory management is very important and is considered a valuable asset for a company. This is because inventory turnover is one of the main factors contributing to the company's revenue (Sumber et al., 2021). In a company, it is necessary to implement an effective inventory management system in order to properly control raw material inventory (Sanjaya et al., 2021). One of them, PT. Imedia Nusantara as a home-based company engaged in online sales transactions of various kinds of goods such as cosmetics, household appliances, mobile phone accessories, electronics and others, also requires an efficient inventory management system. PT. Imedia Nusantara, along with the growth and development of its business, experienced difficulties in managing their stock efficiently. Problems such as inventory errors, stock shortages, or overstock can hinder operational efficiency, result in unnecessary costs and negatively impact customer satisfaction. In order to overcome these problems, this study aims to design an Odoo-based stock management system at PT Imedia Nusantara. Odoo is a management software that provides a complete range of business applications for business management and is one of the most popular applications on the market, especially in terms of ERP systems. Odoo is developed and distributed as opensource software, and offers a variety of modules including Sales, Inventory, Accounting, Finance, Point of Sale (POS), and others (Marganti et al., 2023). It takes proper alignment between business processes and information technology so that all available resources can be optimized, and information technology becomes an inseparable part of the company. One approach that can be applied to integrate systems in companies is Enterprise Resource Planning (ERP), which is a method for companies to achieve effectiveness in business processes by dividing information into two parts, namely within and between business processes, and running business digitally. (Demilda et al., 2021). This research highlights the importance of adopting the right technology in the management of company inventory. By formulating the problem of how to design an Odoo-based stock management system for PT Imedia Nusantara, it is expected that companies can optimize their inventory management. This system will include accurate inventory, real-time inventory monitoring, and efficient stock reordering. Thus, it is hoped that the design and implementation of this system will provide significant benefits for PT Imedia Nusantara. Through this research, we hope to contribute to the

understanding and implementation of an Odoo-based stock management system. In addition, this research is also expected to be a basis for further research and development in stock management and implementation of management systems in similar companies.

## LITERATURE REVIEW

### Enterprise Resource Planning

Enterprise Resource Planning (ERP) is a business management system solution that is used to organize, automate, and integrate all business functions within an organization. ERP systems include a number of integrated software packages that include a wide range of business tools and applications for product planning, budgeting and development, manufacturing, inventory management, supply chain, marketing and sales, shipping and payments, human resource management, and customer information (Gozukara et al., 2022). The main objective of an Enterprise Resource Planning (ERP) system is to integrate operational procedures between components and information systems effectively and flexibly. This aims to reduce costs in the supply chain, speed up time, improve quality, and provide better service to customers (Sulistiyanti et al., 2022). The ERP system has a shared database that supports various functions used by different business units. By using this database, the ERP system shares common data and provides access to the data needed by departments within the organization. ERP systems provide significant benefits to organizations by reducing operational and maintenance costs for information systems, reducing administrative costs, increasing business process efficiency, and improving the quality of information for better decision making and improved organizational performance (Marganti et al., 2023). Using an ERP system makes it easier to design and process data. In the ERP system, each department can be integrated through the Odoo system. This facilitates coordination and management between departments. One of the ERP applications that can be used to support company activities is Odoo (Nugroho et al., 2023).

### Odoo

Odoo is an ERP system designed to meet company needs and improve business performance. Odoo is "Open Source" software, which means that its source code can be used, modified, and used as a basis for development by others. The developers have direct access to the Odoo source code. To be open source software, Odoo must meet certain criteria, including source owner, distribution license, licensing terms, distribution, derivative works, and code integrity (Marganti et al., 2023). Odoo has various forms that can be adapted to user needs, including web-based, desktop and mobile. In addition, this software has a number of advantages, such as having support from various developer communities, complete and integrated modules, easy installation, and affordable costs (Lesmana et al., 2020). The business features in the Odoo-based ERP system are designed in modules that meet international standards. Some of the modules available on Odoo include sales, purchasing, CRM, and manufacturing (Chin & Lukman, 2022). The Odoo platform provides convenience in inventory management and can effectively support the company's business processes. With comprehensive features and reliable functionality, this system can be used completely effortlessly (Purwanto et al., 2023).

### Rapid Application Development

The RAD method is one of the approaches used in software development with the aim of reducing the time required in the development process. The RAD method in system development involves a series of stages, including planning, system design, and implementation (Wijaya et al., 2020).

### Stock Management

Stock management is an important activity in a trading company because it relates to inventory. Inventory of goods is a key element in trading business. Information related to inventory has a very important value. Errors in entering data regarding incoming and outgoing goods can cause serious problems, such as stockpiling of goods in warehouses or inventory shortages. Therefore, companies need technological support in the form of

information systems that can facilitate and speed up access to information regarding stock management (Alfianti et al., 2021)

## **METHODS**

### **Research methods**

The research method used is the RAD method with the aim of designing a stock management system at PT. Imedia Nusantara collects data through observation and interviews. Researchers directly observed the stock management process at PT. Imedia Nusantara and conducted interviews with related parties to gain a deeper understanding of the company's challenges and needs in managing stock. In addition, the authors also utilize several tools, such as the Draw.io and Flowchart applications, to support the system design process. According to Draw.io on (JGraph Ltd, 2005) (accessed 2023) "draw.io is an open source technology stack for building diagramming applications, and the world's most widely used browser-based end-user diagramming software." UML is a standard modeling and communication language that has wide use in various industries. The main purpose of UML is to describe the system using diagrams and supporting text. UML is often used in identifying system requirements, performing analysis, and designing solutions (Puspitasari et al., 2021). The Draw.io application is used to design system modeling using the Unified Modeling Language (UML), which helps in visualizing the components and relationships in the stock management system. Meanwhile, flowcharts are used to clearly describe workflows or processes in stock management. By using observation and interview methods, as well as utilizing the Draw.io and Flowchart applications, the author can obtain accurate data and understand well the stock management process at PT. Imedia Nusantara. These data and tools form a solid foundation for designing an Odoo-based stock management system that fits your company's needs.

### **System Development Method**

In developing this system, the author decided to use the RAD (Rapid Application Development) method. The reason for choosing the RAD method is because the method aims to reduce the time usually required in the development of information systems, which often takes quite a long time. The RAD method used in this study involves several stages that will be carried out for PT. Imedia Nusantara, namely:

#### **Requirements Planning**

At this stage, the authors analyze and understand the information system requirements required by PT. Imedia Nusantara. This is done through interaction with related parties and identifying the needs that must be met by the system.

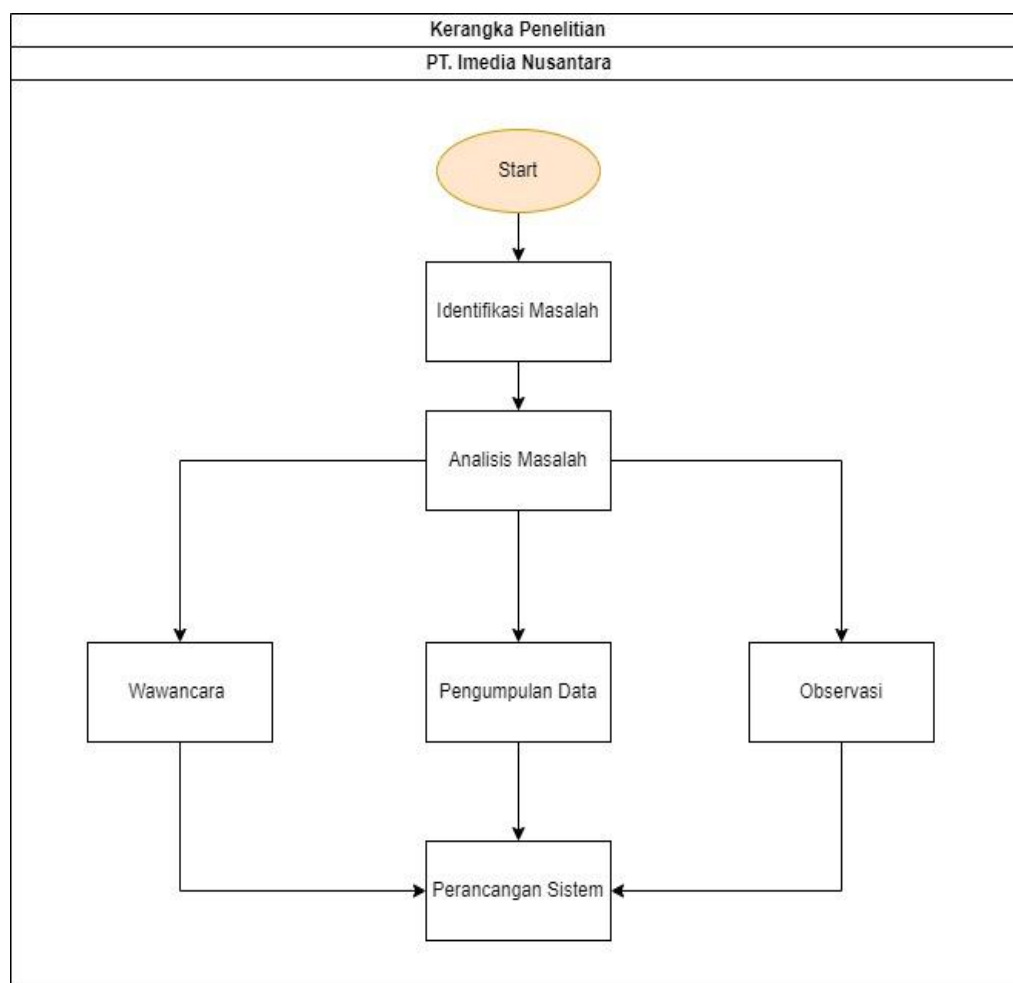
#### **Design Workshop**

This stage involves a meeting between the research team and related parties from PT. Imedia Nusantara. In this meeting, discussions and system design using the RAD method were carried out. The purpose of this meeting is to design the system collaboratively, ensure a clear understanding, and get input from related parties.

### **Research Thinking Framework**

In this frame of mind, the author will explain the flow of problem identification, problem analysis, data collection, system design. The following are pictures and explanations regarding the Odoo Inventory Research framework at PT. Imedia Nusantara.

In figure 1, the problem identification stage becomes the starting point in research. The author will identify the problems that exist in PT. Imedia Nusantara, such as inventory inaccuracies or lack of efficiency in the inventory process. After that, the problem analysis stage will be carried out to understand the causes and impacts of the problems identified.



**Figure 1.** Research Thinking Framework  
**Source:** Researcher, 2023

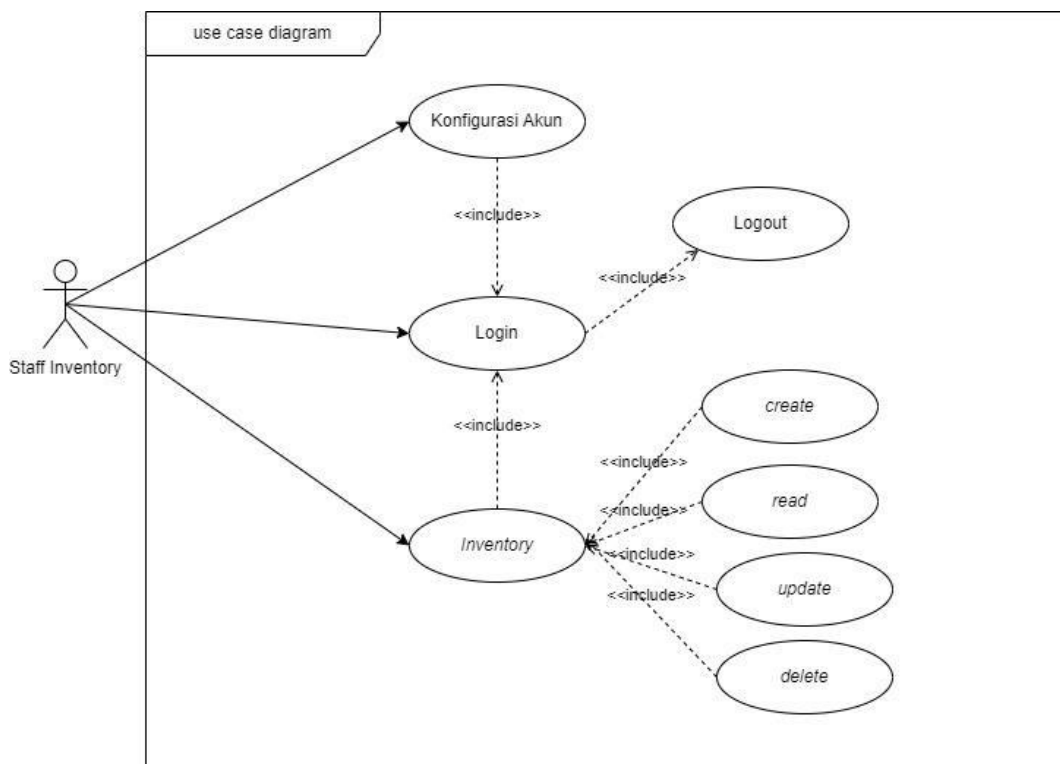
The author will analyze the factors that influence stock management and find the right solution to increase efficiency and accuracy. Furthermore, the data collection stage is carried out to obtain relevant and necessary information in the design and implementation of the Odoo Inventory system. Data will be collected through observation, interviews, and examination of related documents. After data collection is complete, proceed to the system design stage on odoo.

## RESULTS

PT. Imedia Nusantara is a home-based company engaged in sales transactions of various kinds of goods such as cosmetics, household appliances, cellphone accessories, electronics, and others online on E-Commerce such as Tokopedia and Shopee in 2019. The inventory system currently used by PT. Imedia Nusantara is described as a manual process in which incoming and outgoing goods data is recorded and inputted using Microsoft Excel. Because of this, the admin or user who is responsible for inventory in the company spends a lot of time looking for the required item data, errors often occur when writing item codes, and inputting items repeatedly. As a result, this can lead to errors in the inventory reports that are generated each month.

In the system design process, researchers chose the Odoo application version 16 as the system to be used by PT. Imedia Nusantara. To provide a more detailed description of the design, researchers used Unified Modeling Language (UML) diagrams and implemented them using the Odoo application. UML is a language used to define, describe, construct,

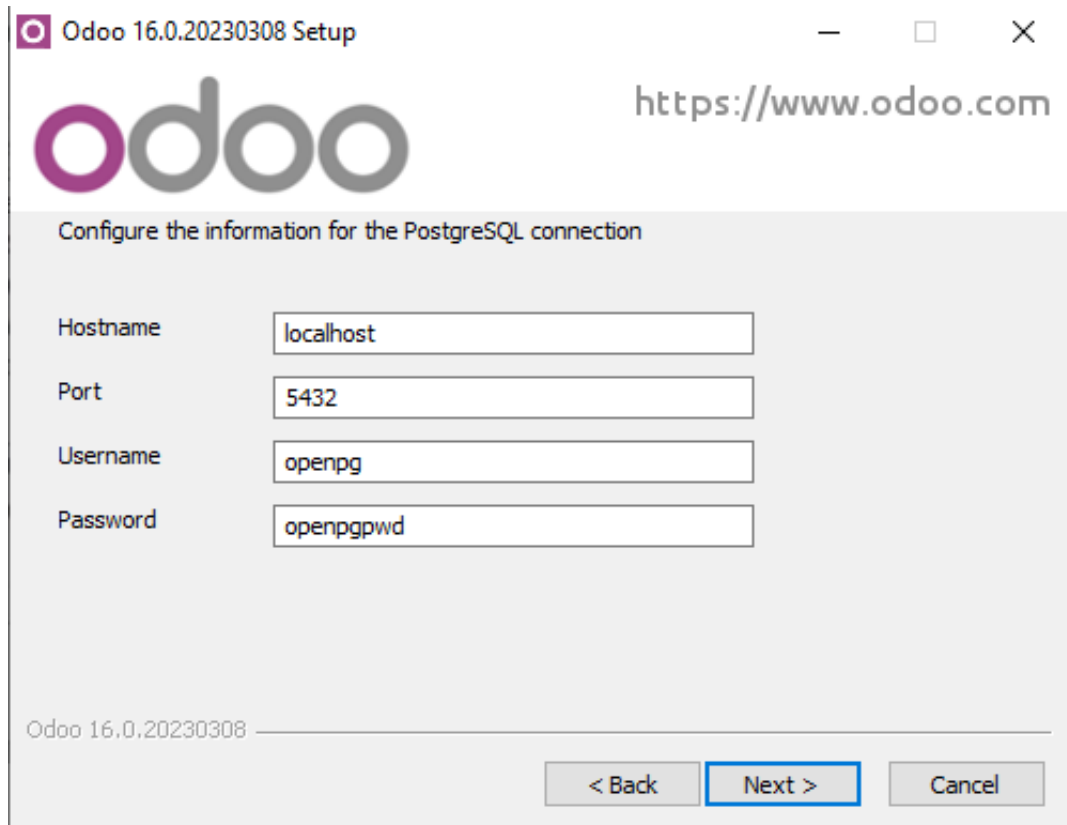
and document artifacts in software development. These artifacts can be models, descriptions, or software related to the software system. UML is also used for modeling business and other non-software systems (Mulya et al., 2021). In the system design process, researchers chose the Odoo application version 16 as the system to be used by PT. Imedia Nusantara. To provide a more detailed description of the design, researchers used Unified Modeling Language (UML) diagrams and implemented them using the Odoo application. UML is a language used to define, describe, construct, and document artifacts in software development. These artifacts can be models, descriptions, or software related to the software system. UML is also used for modeling business and other non-software systems (Fadillah et al., 2022). Researchers have created a use case diagram for the Odoo SOL system that will be used by PT. Imedia Nusantara. This use case diagram identifies the main actors as "Inventory staff" and shows the activities involved in the system. The activities of this system can be seen in Figure 2 which clearly displays this use case diagram.



**Figure 2.** Use case diagram

**Source:** Researcher, 2023.

The Odoo platform has two configuration methods, which are online and can be downloaded first. Each method has its own advantages. If you only need a browser as a tool, then the online version can be used. However, if you have sufficient hardware capacity, the offline version can be used. In this study, the configuration used is the offline configuration (Purwanto et al., 2023). After downloading and installing the Odoo application, users will be given the option to develop their own system using the platform provided by Odoo. One of the first elements to develop is the application's user interface. Following are the steps that can be followed to create an Odoo application interface: (1) Host is a service that operates via the internet and is used to store data or run applications on a central server. This service allows access via the internet network (Fadillah et al., 2022a). In this design, Odoo has provided its own host where users can provide their own username and password to maintain the security of sensitive company data and avoid overload on the server as shown in Figure 3;



Odoo 16.0.20230308 Setup

<https://www.odoo.com>

Configure the information for the PostgreSQL connection

Hostname:

Port:

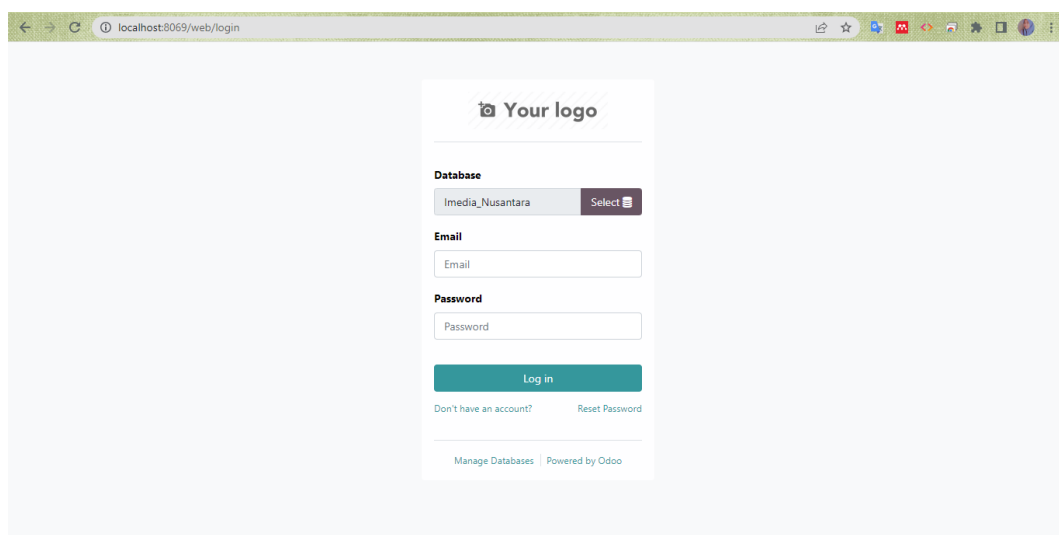
Username:

Password:

Odoo 16.0.20230308

< Back   Next >   Cancel

**Figure 3.** Odoo Installation Configuration  
**Source:** Researcher, 2023.



localhost:8069/web/login

Your logo

Database

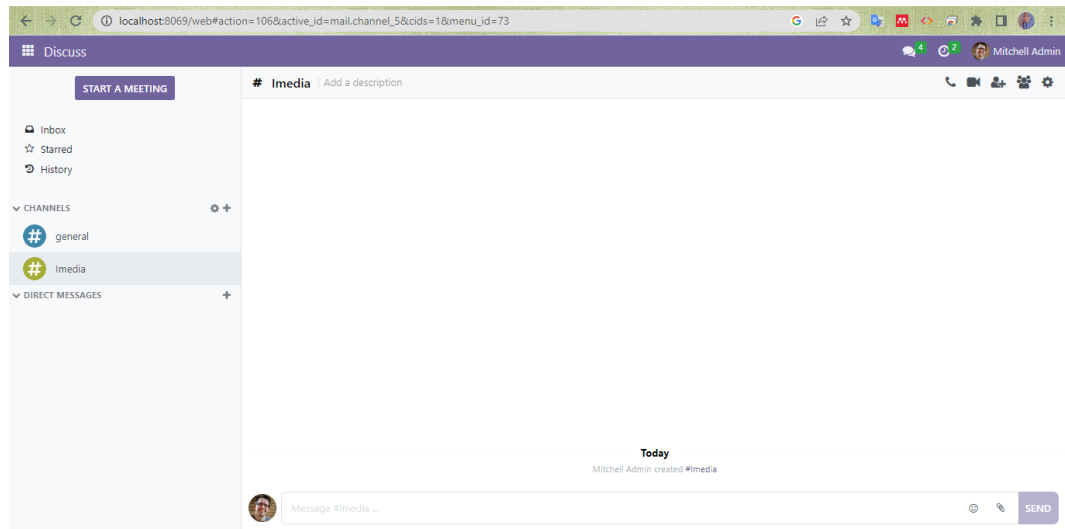
Email

Password

[Don't have an account?](#) [Reset Password](#)

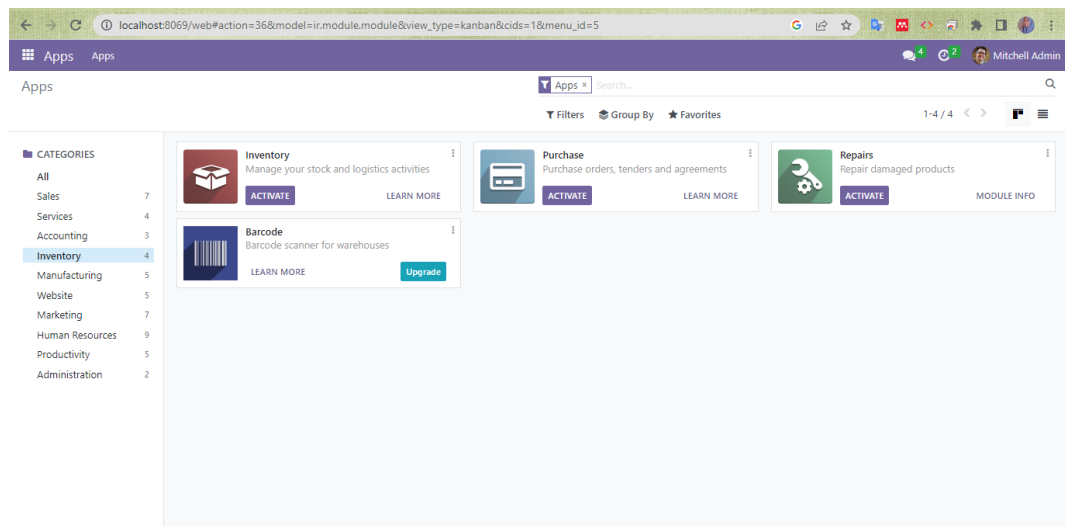
[Manage Databases](#) | Powered by Odoo

**Figure 4.** Odoo login screen  
**Source:** Researcher, 2023.



**Figure 5.** Discuss page for PT Imedia Nusantara  
**Source: Researcher, 2023**

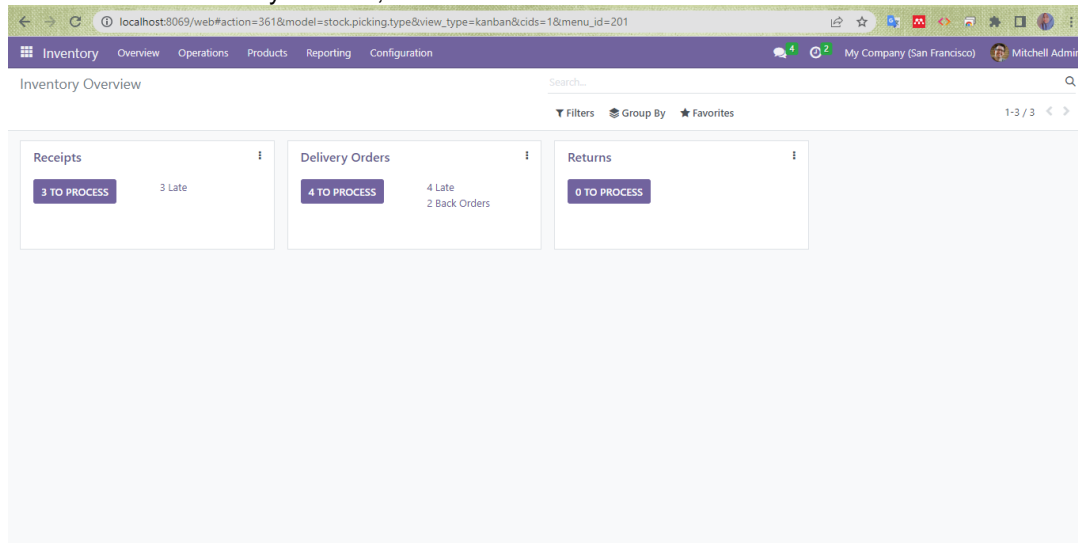
(2) After completing the installation process, to access Odoo, we need to connect to the internet and open the Odoo application by typing <http://localhost:8069/web/login> in the browser. The initial appearance of the Odoo application can be seen in Figure 4; (3) On this main page, researchers act as administrators who are responsible for managing the system and can provide messages to users, similar to social media features. There is a box icon located next to the discussion area, which functions to start the system as shown in Figure 5. (4) Odoo provides a variety of modules that can be used, not limited to one module per host, and allows the use of multiple modules simultaneously on one host (Fadillah et al., 2022b) In selecting modules for PT Imedia Nusantara in designing this system, only the Inventory module is needed. Therefore, the researcher only installed the Inventory module as shown in Figure 6;



**Figure 6:** Odoo Inventory Module  
**Source: Researcher, 2023.**

(5) On the Inventory Module interface, there are several icons such as overview, operation, product, reporting, and configuration, as shown in Figure 7, each of which has a specific function. However, in daily use, users only use the Product icon which is used to record the quantity and price of goods. The Reporting icon is used to display incoming, outgoing, and

stock data in the warehouse. Finally, the researcher uses the Configuration icon to manage data related to the inventory module;



**Figure 7.** View of the Odoo Inventory Module

**Source:** Researcher, 2023.

(6) After adding goods, users can see what items are in the warehouse through the "New" icon located on the Product menu tab; (7) Users can access reports regarding incoming goods, outgoing goods, and goods that are still in the warehouse via the "Reporting" menu tab; (8) In the configuration menu tab, users can manage various inventory activities including Setting, Warehouse, Operations Type, Product Categories, Attributes and Reordering Rules.

## DISCUSSION

There is a configuration required in the process of designing a stock management system on Odoo version 16, which includes the following steps:

### Create database

This stage includes creating a database that will be used for the stock management system on Odoo version 16. This database will store all stock-related information such as products, incoming stock, outgoing stock, and others. database used for PT. Imedia Nusantara is useful in managing its stock management system. The database will be used to store and manage all information related to the company's stock.

### Login database

This stage involves the process of entering or logging into the database that was previously created. This login is done to gain access to various features and functionality provided by the Odoo stock management system version 16.

### Side menu apps

After successfully logging into the database, the next step is to open the application menu (apps) available on Odoo. In this menu, the user can install several modules required for the stock management system. These modules are additions or extensions that provide special features and additional functions that can be used in managing a company's stock. the names of the required module categories are Inventory, Purchase, Repairs and Barcode.

After successfully designing a stock management system, the next step is to wait for the data input process carried out by PT. Imedia Nusantara. After the data is entered into the system, the stock management system will be ready to be used to manage and monitor the company's stock.



## CONCLUSION

By having an efficient and integrated stock management system based on Odoo, PT Imedia Nusantara can improve accuracy, skill and effectiveness in managing their inventory. This will help them avoid stock shortages or stock overstocks that could potentially hurt their business. In addition, this system can also provide real-time information about product stock, customer demand and market trends, enabling PT Imedia Nusantara to make more informed decisions in terms of inventory procurement, production planning and marketing strategy. Overall, it is hoped that the implementation of an Odoo-based stock management system will help PT Imedia Nusantara in increasing efficiency, reducing costs, and increasing customer satisfaction.

## LIMITATION

This research focuses on the process of designing a stock management system based on Odoo. It is hoped that this research will continue into further research by further developing the inventory module, as well as expanding the role of other modules such as purchasing which also have an important role. Thus, this research is expected to contribute to increasing the efficiency and effectiveness of company stock management, as well as providing a more comprehensive solution for inventory management needs at PT Imedia Nusantara and possibly other companies.

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